

BLANK SCENARIOS AND NUCLEAR, BIOLOGICAL, AND CHEMICAL (NBC) DEVELOPMENT TOOL (cont.)

SECTION 2 NUCLEAR, BIOLOGICAL, AND CHEMICAL (NBC) DEVELOPMENT TOOL

NUCLEAR, BIOLOGICAL, AND CHEMICAL SIGNS AND SYMPTOMS

	NERVE AGENTS				PULMONARY/CHOKING AGENTS
	MILD EXPOSURE		SEVERE EXPOSURE		
	Vapor	Liquid	Vapor	Liquid	Phosgene/Diphosgene
Symbols	GA, GB, GD, GF, VX				CG, DP
Mechanism of action	Anticholinesterase agents	Anticholinesterase agents	Anticholinesterase agents	Anticholinesterase agents	Lung damaging agent
Cardiovascular System	Occasionally early transient tachycardia and/or hypotension	Occasionally early transient tachycardia and/or hypotension	Occasionally early transient tachycardia and/or hypotension followed by bradycardia and hypotension	Cardiac arrhythmias, occasionally early transient tachycardia and/or hypotension followed by bradycardia hypotension	Shock after severe exposure, hypotension and tachycardia
Eyes	Pinpoint pupils (miosis), blurred vision	If direct contamination; miosis, lacrimation, redness	Miosis, lacrimation, pain focusing, redness	If direct contamination; miosis, lacrimation, pain focusing	Irritation. Lacrimation (after respiratory symptoms)
Skin		Sweating at exposure site		Excessive sweating, pallor, then cyanosis	Possible cyanosis following pulmonary edema
Nose/Throat	Rhinorrhea (runny nose), increased salivation	Rhinorrhea (runny nose), increased salivation	Rhinorrhea (runny nose), increased salivation	Rhinorrhea (runny nose), increased salivation	Irritation
Respiratory Tract	Tightness in chest, cough	Delayed onset; Tightness in chest, cough	Severe dyspnea -> Apnea, gurgling sound when breathing	Severe dyspnea -> Apnea, gurgling sound when breathing, bronchoconstriction	Coughing, choking, chest tightness on exposure. Latent period, then pulmonary edema, dyspnea, frothy sputum, pneumonia and fever
GI Tract	Salivation, anorexia, nausea, vomiting	Nausea, vomiting, abdominal cramps	Loss of bowel control, vomiting	Loss of bowel control, nausea, vomiting, epigastric tightness, abdominal cramps	Nausea, occasional vomiting after respiratory symptoms
Genito-Urinary	Frequent urination	Frequent urination	Loss of bladder control	Loss of bladder control	No effects
Central Nervous System	Apprehension, drowsiness, poor memory, insomnia, headache	Muscle twitching at exposure site, feeling of weakness	Same as mild exposure. Generalized muscular twitching, weakness, slurred speech paralysis, convulsions, coma	Same as mild exposure. Generalized muscular twitching, weakness, slurred speech paralysis, convulsions, coma, ataxia	Anxiety, depression
T R E A T M E N T	* Pre-treatment with pyridostigmine * (1) MARK I	* Pre-treatment with pyridostigmine * (1) MARK I	* Pre-treatment with pyridostigmine * (3) MARK I (5 minutes apart or mouth dryness and tachycardia is noted) * 1 CANA (diazepam) * Assist with ventilation (BVM) (RDIC) * Suction secretions	* Pre-treatment with pyridostigmine * (3) MARK I (5 minutes apart or mouth dryness and tachycardia is noted) * 1 CANA (diazepam) * Assist with ventilation (BVM) (RDIC) * Suction secretions	* Assist with ventilation (BVM) (RDIC) * Rest is a must * Plenty of Oxygen * Antibiotics * Corticosteroids (IV, inhale)

SECTION 2

NUCLEAR, BIOLOGICAL, AND CHEMICAL (NBC) DEVELOPMENT TOOL (cont.)

NUCLEAR, BIOLOGICAL, AND CHEMICAL SIGNS AND SYMPTOMS

	VESICANTS/BLISTER AGENTS			BLOOD AGENTS
	Mustard	Lewisite	Phosgene Oxyme	Hydrogen cyanide/Cyanogen chloride
Symbols	H, HD, HT, HN-1, HN-2, HN-3	L	CX	AC, CK
Mechanism of action	Bone marrow depressant, alkylating agent, damage DNA	Vesicant, arsenical poisons	Powerful vesicant	Interferes with OXYGEN utilization at cellular level
Cardiovascular System	Shock after severe exposure	Shock after exposure, hemolytic anemia, hemoconcentration	No effects	Profound tachycardia
Eyes	Miosis, pain, redness, edema of lids, photophobia, lacrimation, corneal ulceration	Prompt redness, edema of lids, irritation, pain, immediate burning, corneal injury	Violently irritating, redness, lids edema, corneal injury with blindness, lacrimation	No effects
Skin	No immediate signs. After minutes to hours, redness and burning. Several hours later blisters surrounded by redness and itching. Several days later necrosis, generally limited to epidermis. Risk of secondary infection.	Prompt burning. Red within 30 minutes. Blister on 1st or 2d day. Pain worse and necrosis deeper than mustard agents.	Immediate severe irritation and intense pain. Within 1 minute the affected area turns white, surrounded by erythema. Blistered after 24 hours. Necrosis may occur. Long recovery.	Initially pinker than usual, may change to cyanosis
Nose/Throat	Swelling, irritation, ulceration, discharge, occasional edema of larynx	Prompt irritation	Very irritating to mucous membranes	No effects
Respiratory Tract	Slowly developing irritation, hoarseness, aphonia, cough, tightness, dyspnea, rales, pneumonia, and pulmonary edema in severe cases	Rapid irritation, hoarseness, aphonia, cough, pneumonia, fever, pulmonary edema, pleural edema in severe cases	Rapid irritation and coughing. Later pulmonary edema.	Deep respiration followed rapidly by dyspnea, gasping, then cessation of respiration
GI Tract	Pain, nausea, vomiting, diarrhea	Diarrhea, nausea, vomiting, hepatic failure	No effects	Nausea, vomiting
Genito-Urinary	No effects	Renal failure	No effects	No effects
Central Nervous System	Anxiety, depression	Anxiety, depression	Anxiety, depression	May have initial excitation; then depression, giddiness, headache, irrational behavior, ataxia, convulsion or coma
T R E A T M E N T	<ul style="list-style-type: none"> * Skin: Irrigate, local dressings and antibiotics * Assist with ventilation (non-rebreather, BVM, RDIC) * Eyes: Irrigate, antibiotics * IV fluids * Analgesics * GI: Phenergan for vomiting, itching, and edema 	<ul style="list-style-type: none"> * Skin: Irrigate, local dressings and antibiotics * Assist with ventilation (non-rebreather, BVM, RDIC) * Eyes: Irrigate, antibiotics * IV fluids, antidote (BAL) * Analgesics * GI: Phenergan for vomiting, itching, and edema 	<ul style="list-style-type: none"> * Skin: Irrigate, local dressings (with sodium bicarbonate) and antibiotics * Assist with ventilation (non-rebreather, BVM, RDIC) * Eyes: Irrigate, antibiotics * IV fluids * Analgesics * GI: Phenergan for vomiting, itching, and edema 	<ul style="list-style-type: none"> * Assist with ventilation (BVM) (RDIC) * Cyanide antidote: Nitrites, dicobalt edetate and thiosulphate